VOC-TRAQ II & VOC-TRAQ flow cell
User Manual

Preliminary
(Specifications subject to change)

VOC-TRAQ II
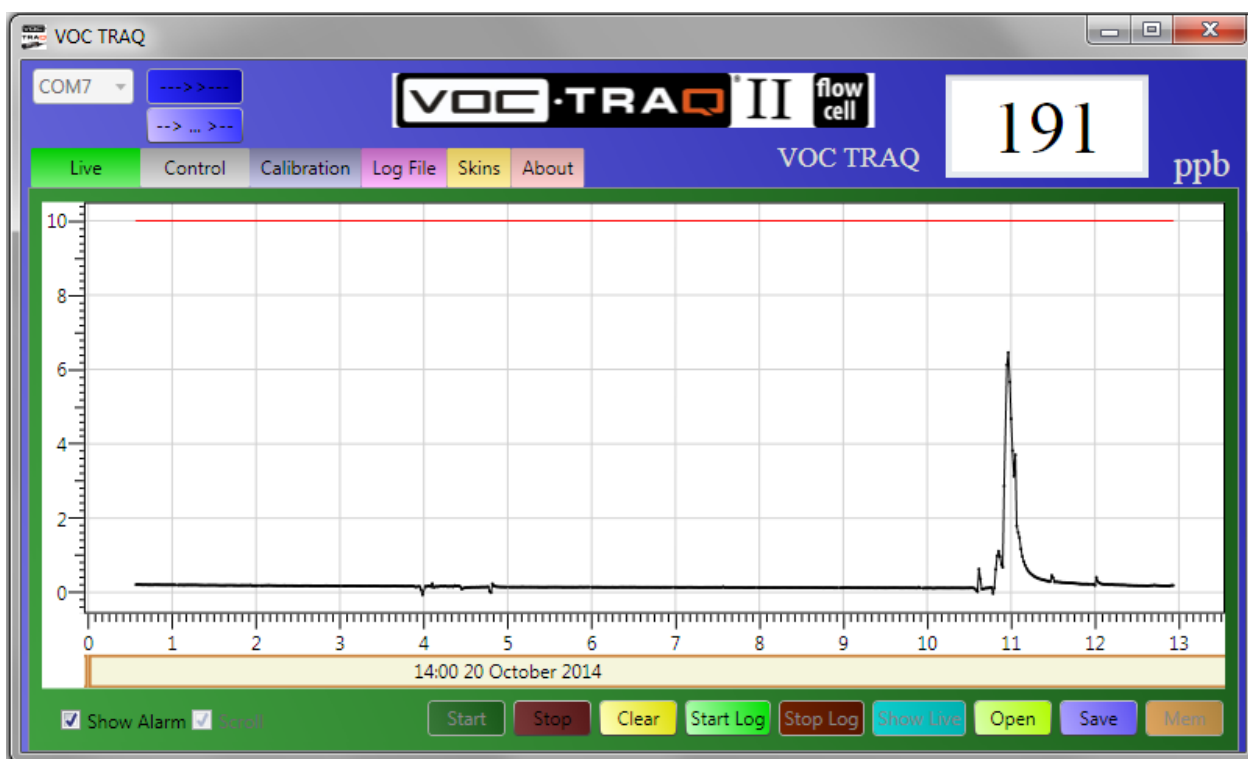
VOC-TRAQ flow cell

Contents

Section 1 - Introduction and Overview

1.1 Introduction

This manual will familiarize the customer with the Baseline-MOCON VOC-TRAQ II and the VOC-TRAQ flow-cell using the piD-TECH **eVx** photoionization sensor. This includes the principle of operation, technical characteristics, as well as some PID-specific application features. The manual will instruct customers to easily operate the VOC-TRAQ II and the TRAQ-WARE software.

1.2 VOC-TRAQ II & VOC-TRAQ flow cell Overview

Portable Photoionization Detector (PID)

The VOC-TRAQ II & VOC-TRAQ flow cell total volatile organic compound (TVOC) detectors are an excellent way to monitor and record TVOC's. They operates using any PC with a Windows® operating system. Using the latest Baseline®-MOCON® eVx® plus photoionization detector makes the VOC-TRAQ II the most reliable, accurate, and inexpensive portable TVOC detector on the market.

Designed for ease of use all air quality consultants, safety engineers, maintenance managers, or anyone concerned about TVOC's in the indoor environment.

The USB compatible VOC-TRAQ II can operate while connected to a PC or it can remotely store up to 36,000 sample readings with the detector's internal memory using the optional rechargeable power supply. Alarm levels are programmable with LED and/or audible notification. The VOC-TRAQ II is also compatible with numerous USB accessory options.

The VOC-TRAQ II is a simple compact design for monitoring TVOC's in most environments. The included software allows easy calibration, setup, display and analysis.

The VOC-TRAQ II consists of a cylindrical housing equipped with a USB port and a 3 color LED. On the top, there is are slotted openings that serve as an entrance for analyzed gas. The photo ionization detector and associated electronic circuits are located inside the housing.

The LED indicates:

- Slow (~ once every 5 sec) Blinking Green = power on and operating.
- Blinking Red = Alarm level exceeded. The greater the concentration exceeds the alarm level the faster the flashing.
- Blinking Yellow = Alarm event occurred then returned below alarm level.

The USB port provides:

- USB 5 VDC power for operation (PC, wall connected USB power supply, or optional battery pack).
- USB to PC communications to the software.

Section 2 - VOC-TRAQ II Installation, Calibration & Operation

2.1 Installing VOC-TRAQ II Software

Insert the VOC-TRAQ II Software Flash Drive. Open the folder to see the contents. Select the setup executable file. The software will load.
When complete the VOC-TRAQ II drivers and the software will be installed and ready to use. Be sure to restart your computer after installation.
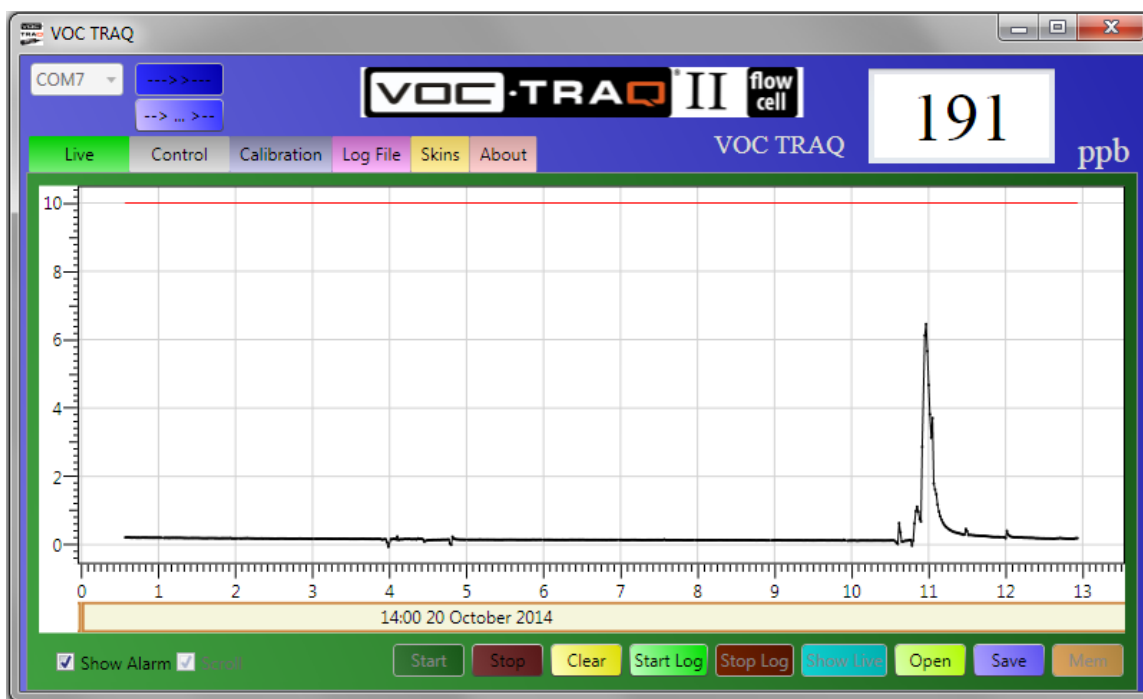
2.2 Configuring the VOC-TRAQ flow cell

The VOC TRAQ flow cell can be configured 2 ways. One with a cable between the sensor head and the VOC TRAQ body. See Photo below.

1) The flow cell cap is threaded (2 x 6-32 UNC) for easy mounting
2) 1/4-28 UNF sample inlet / outlet ports
3) Inlet Pressure: 0-60 psi
4) Inlet Flow: 0-300 cc/min

The second with the 2 halves assembled together using 2 screws provided. See Photos below.
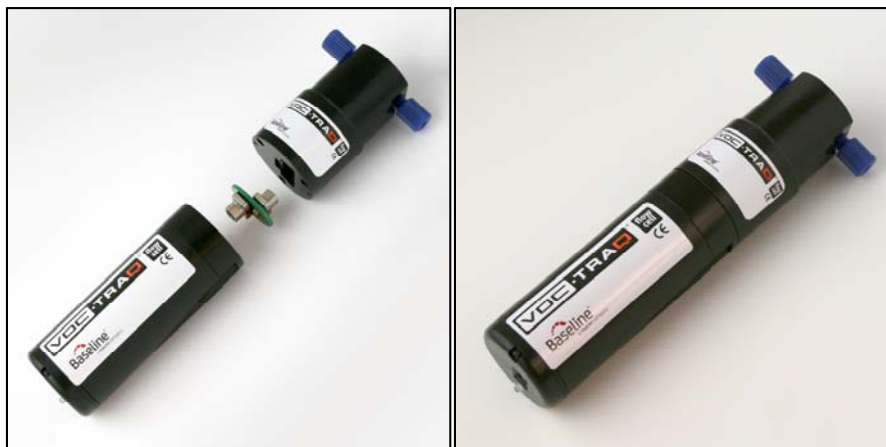
2.3 Powering Up the VOC-TRAQ II

Connect the USB cable to your computer and then connect the VOC-TRAQ II.
Note that the VOC-TRAQ II goes through a initialization sequence upon power up
(flashing red LED with beep, flash amber, flash green, then beep). Always
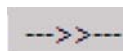power up the VOC-TRAQ II before opening the Software.

2.4 VOC-TRAQ II Operation
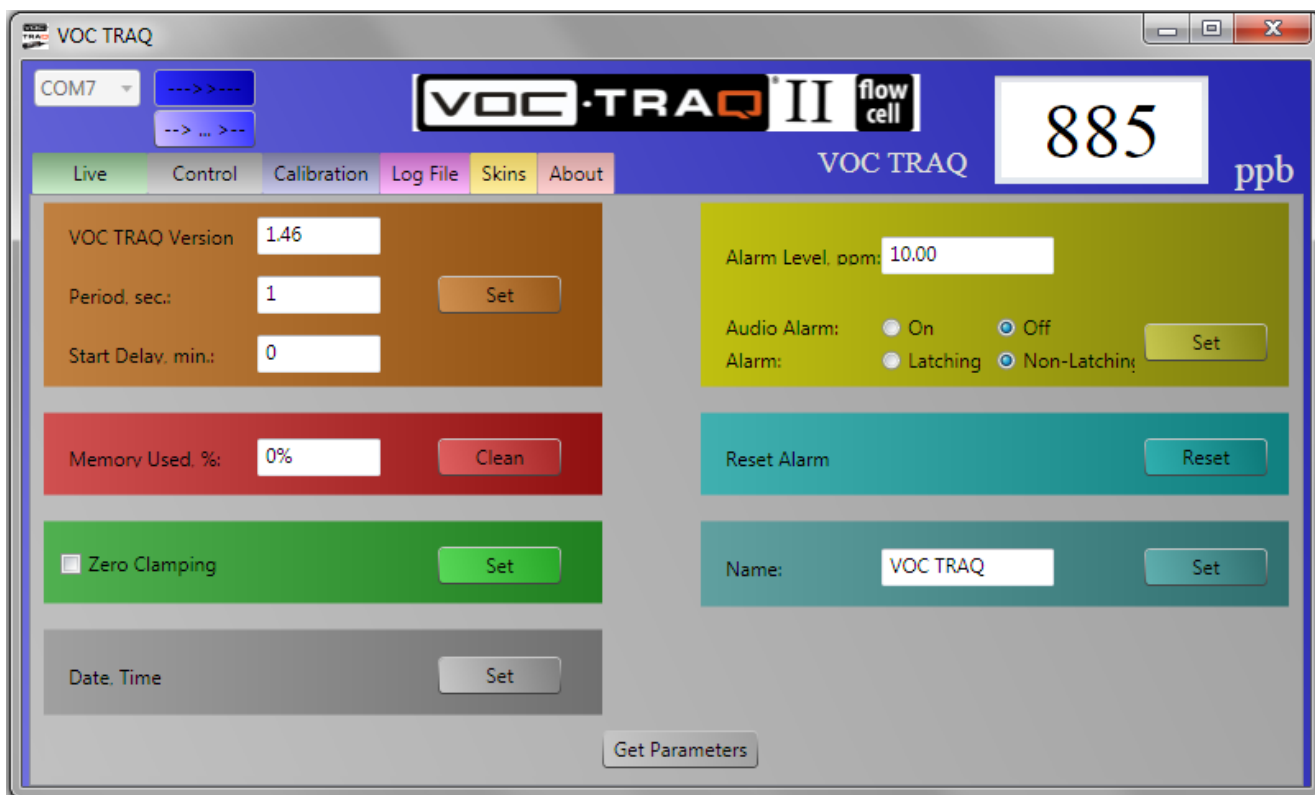
Begin

Open the software and select the "Control" tab. The display above will appear.

From the COM tab select the VOC-TRAQ II COM Port then "Connect".
Note: If you are not sure what COM port is the VOC-TRAQ II check in Windows "Device Manager" and look under "Ports". The VOC-TRAQ II is identified as the "USB Serial Port".

Set Time: Select "Set" Date, Time. Your PC's date and time will be set into the VOC-TRAQ II.

Get Parameters: Select the "Get Parameters" tab and the data from the VOC-TRAQ II will be displayed.

Parameters:

Version: displays level of firmware on VOC-TRAQ II

Period, Sec: displays the time between data samples. The range is from 0.1 seconds to any integer to set the data sample time in seconds. Press "Set" after entering.

Start Delay, min: displays the time delay in minutes from power up until data sampling begins. Any integer can be entered to set the sample delay time in minutes. Press "Set" after entering. Zero delay is normal.

Memory Used, %: displays the amount of VOC-TRAQ II on board memory is used. To clear memory select "Clean".

Zero Clamping, Variations in air quality, etc. can sometimes result in the zero reading going negative. If this is not desired select the Zero clamping box and press set. The readings will never go below zero.

Alarm Setup

Alarm Level, ppm: displays the Alarm Level set. Enter the alarm level desired and press set.

The LED alarm indication:
- Slow (~ once every 5 sec) Blinking Green = power on and operating – No Alarm.
- Blinking Red = Alarm level exceeded. The greater the concentration exceeds the alarm level the faster the flashing.
- Blinking Yellow = Alarm event occurred then returned below alarm level.

Audible Alarm: Set "on" or "off" to turn on or off the audible beep with alarm.

Latching Alarm: Set latching or non-latching. Latching will have the alarm continue even after the signal has dropped below the alarm level.

Reset Alarm: Press reset to turn off amber "alarm occurred" LED on VOC-TRAQ II

Name: If desired enter the name or location of where the data is being collected. This information will be stored along with the sample data for reference.

2.5 Zero Calibration

The VOC-TRAQ II should be allowed to stabilize for 15 minutes to an hour before performing a calibration.
As a rule, calibration of the sensor on a daily or weekly basis is recommended. However, if the sensor is used in a relatively clean environment, the calibration frequency can be longer.
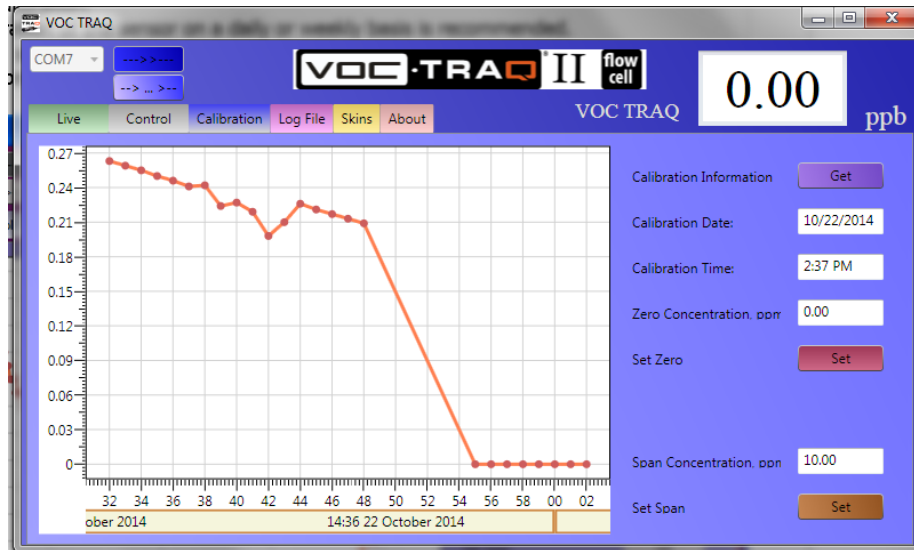
1) Select the "Calibration" Tab.
2) By Calibration Information select "Get"
3) In the box next to "Zero Concentration, ppm:" enter the ppm value of your zero gas (usually 0.00).
4) Using the calibration cap apply zero gas to the VOC-TRAQ II. A stabilization period of one minute or more should be allowed for zero gas and span gas when they are applied to the sensor during a calibration.
5) Select the "Set" button next to Set Zero to calibrate the zero value.

When selecting the Calibration function the program will automatically switch to a 1 second data collection interval for easier calibration. It will switch back when the Calibration function is exited.

2.6 Span Calibration
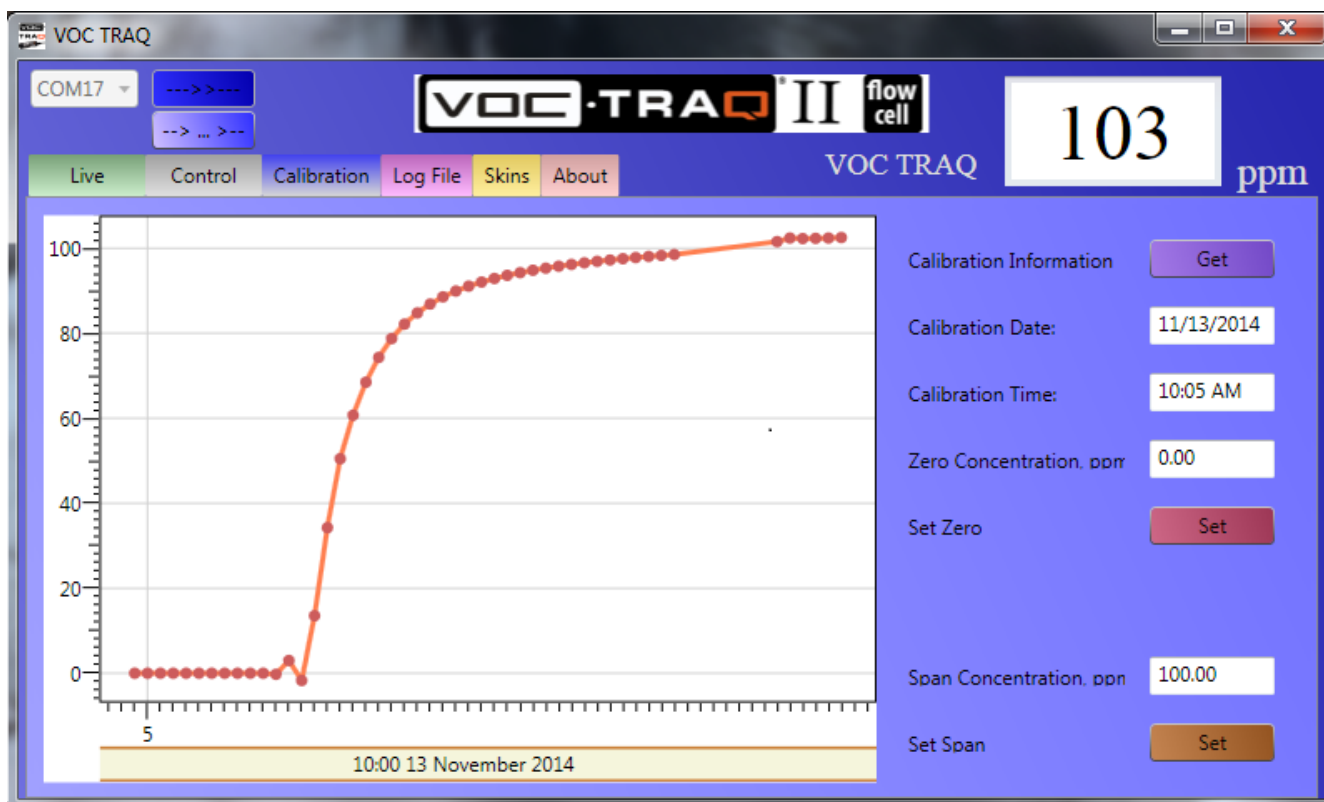
1) In the box next to "Span Concentration, ppm:" enter the ppm value of your span gas.
2) Using the calibration cap apply span gas to the VOC-TRAQ II. A stabilization period of one minute or more should be allowed for zero gas and span gas when they are applied to the sensor during a calibration.
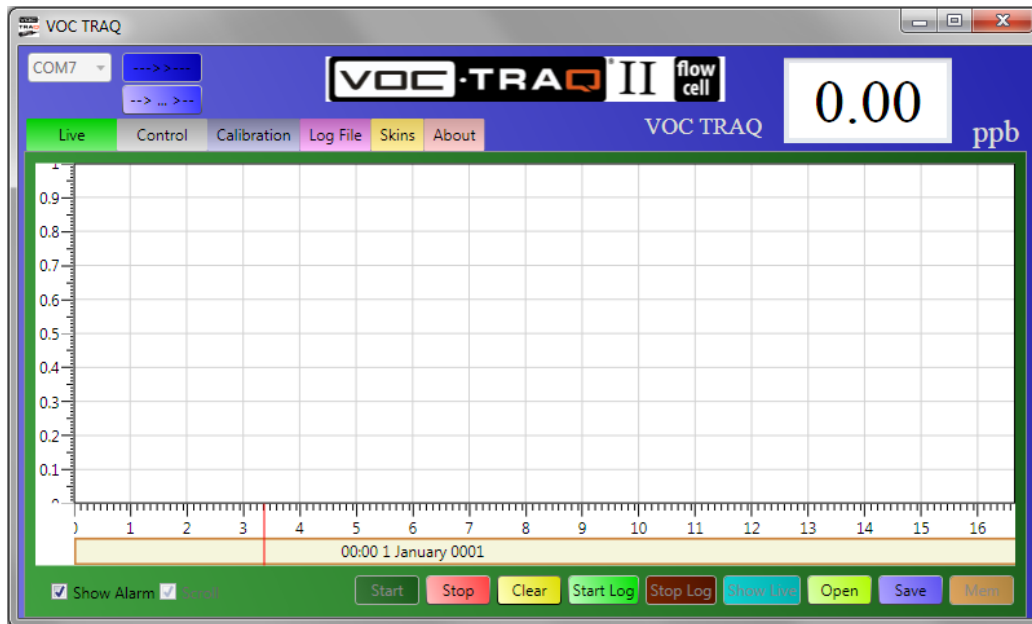3) Select the "Set" button next to Set Span to calibrate the Span value.

This completes the Calibration.

2.7 Log File

**Log File**: Here data files can be "Browsed", created and opened. Enter any file name & open.
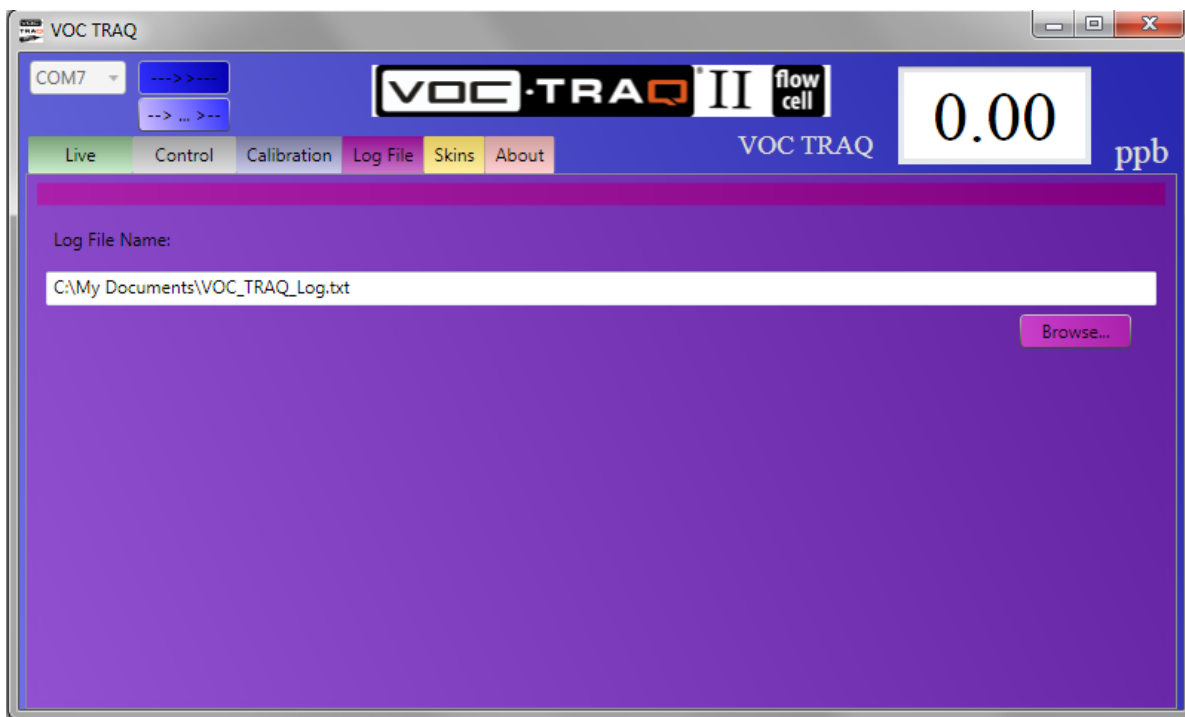
2.8 Display

1) **Live**: Select "Live" Tab to show the display above.
2) **Show Alarm:** Select the "Show Alarm" box to display the alarm level on the graph.
3) **Scroll:** To have the data scroll across the screen select **Stop** then check the **Scroll** box. Otherwise the screen will display all the data collected. Select **Start** to restart the display.
4) **Bottom Button Selections:**
   Start: Starts the VOC-TRAQ II data display (default).
   Stop: Stops the VOC-TRAQ II data display.
   Clear: clears the data shown on the graph.
   Start Log: Starts the VOC-TRAQ II on board data logging.
   Stop Log: Stops the data logging.
   Show Live: Return to actual graph after browsing data.

5) **Open:** Opens a data file. There will be a prompt to choose a file name and location.
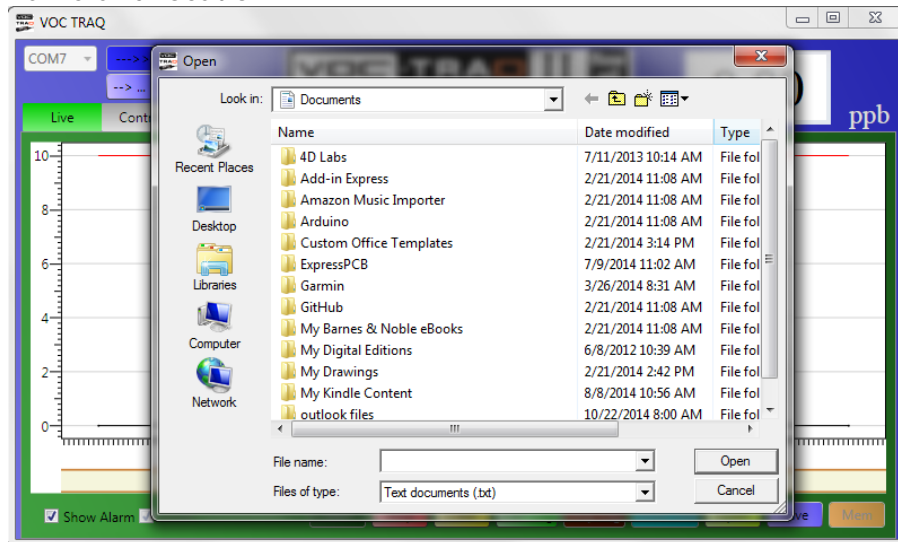
6) **Save:** Saves the data displayed. There will be a prompt to choose a file name and location. This can save actual data as well as "Mem" data.

7) **Mem:** This tab is accessible once the "Stop" button is selected. The VOC-TRAQ II memory can be displayed. It can take up to 4 minutes to download.
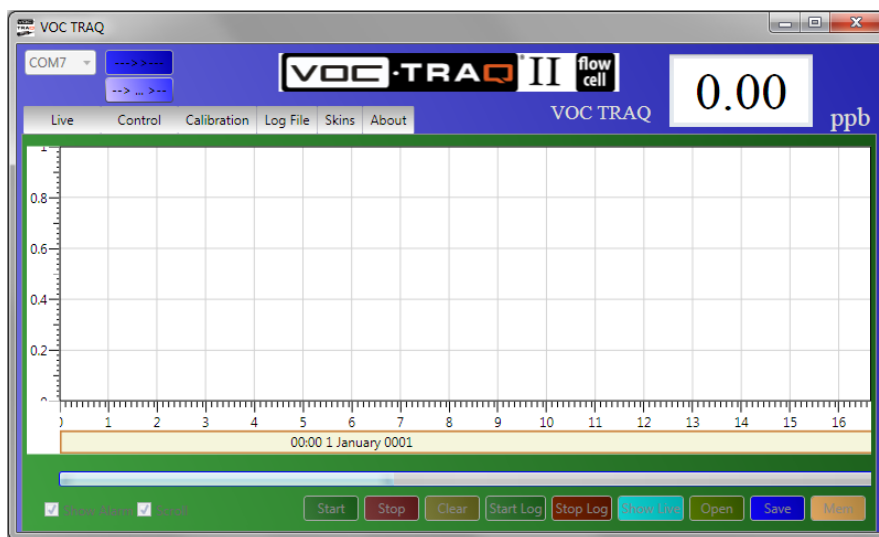
In the picture above a bar graph count down indicates the download % completion. The internal memory can provide more than a week of data with the data interval set to 20 sec.

2.9 Dynamic Data Display

Hold the "**ctrl**" key and drag the mouse to enclose a desired section of graph.
.
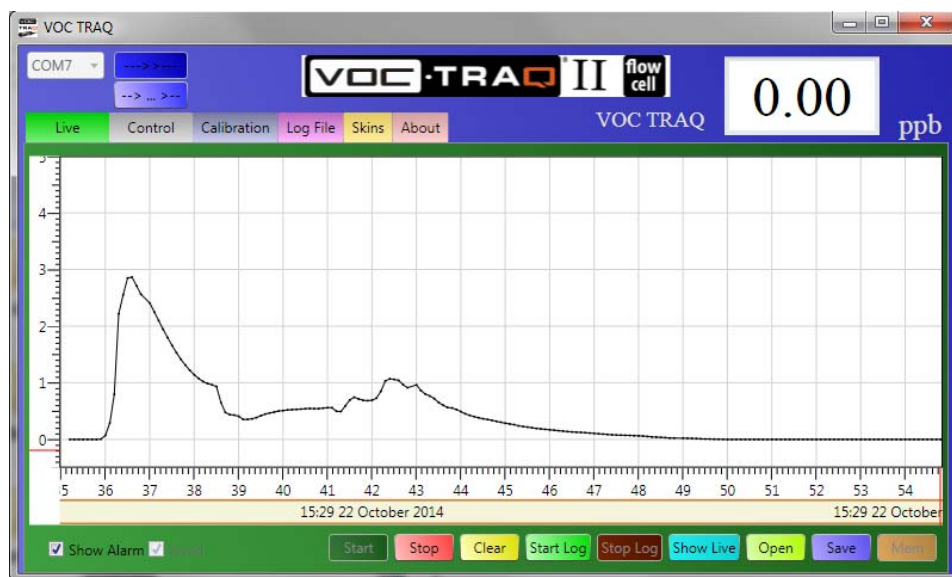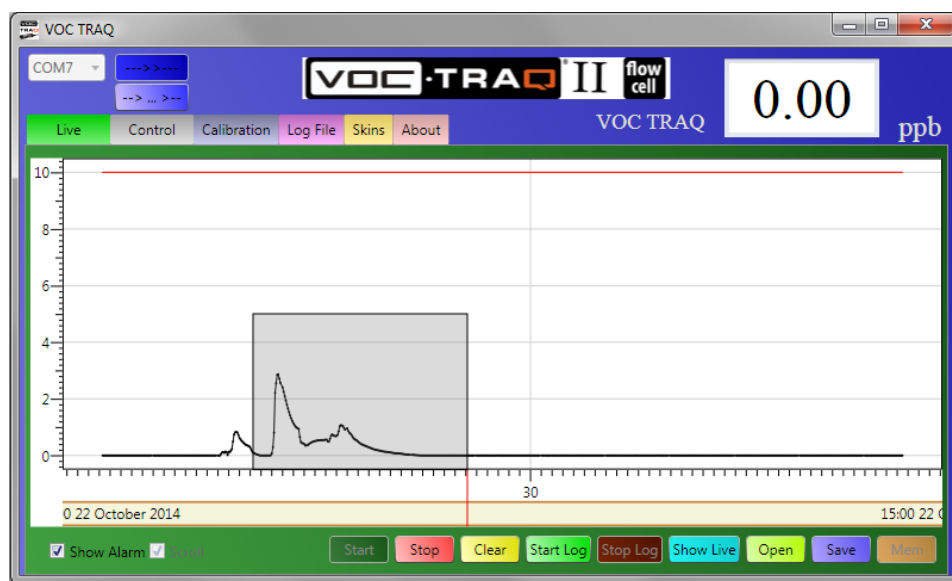
Release mouse key and the enclosed section will be displayed.

Right click and select "Help". The display "Help" menu will appear.

⊕ About DynamicDataDisplay ☒

Dynamic Data Display is in «Auto Fit» mode by default. Using mouse with [Shift] or [Ctrl] pressed down you can manually select an area to display.

Mouse wheel, [+] and [-] keys — Zoom in/Zoom out

Mouse drag or [↑] [←] [↓] [→] — Pan the display area

[Ctrl] + Mouse drag — Select an area to zoom in
[Shift] + Mouse drag — Select an area with current aspect ratio
[Home] — Fit to view
[F11] — Copy screenshot of chart to clipboard
[Ctrl] + [S] — Save screenshot of chart

http://dynamicdatadisplay.codeplex.com/

These commands give the user control over the graphic display.

2.10   Skins

This pull down menu allows the selection of different color schemes as desired.

2.11   About

Section 3 - VOC-TRAQ II & flow cell Specifications

Sensor: Baseline®-MOCON®, Inc. piD-TECH® eVx photoionization detector

Available Dynamic Ranges (Isobutylene):

Part #043-734   10k ppm, Green eVx, 10.6 eV

Part #043-735   2000 ppm, Purple eVx, 10.6 eV

Part #043-736   200 ppm, Red eVx, 10.6 eV

Part #043-737   20 ppm, Yellow eVx, 10.6 eV

Part #043-738   2 ppm, Blue eVx, 10.6 eV

Part #043-739   6000 ppm, Purple eVx, 10.0 eV

Part #043-740   600 ppm, Red eVx, 10.0 eV

Part #043-741   60 ppm, Yellow eVx, 10.0 eV

Operating Temperature: -4 to 104 °F (-20 to 40 °C)

Operating Humidity: 0 - 90% RH, non-condensing

Response Time: T90 4 seconds typical

Accuracy: +/- 3% of reading, w/ constant temperature and pressure

Dimensions: 1″ dia x 3.6″ H (2.5cm dia x 9.1cm H)

Weight: 1.9 oz (54 g)

Internal Memory: 2 Mb EEPROM Memory with programmable sample frequency

Output: USB

Power: Powered from USB (5.0 VDC, 40 mA) or power supply

Calibration: Software controlled

Computer Requirements: Windows 8/Vista/7 PC or equivalent via USB

Lamp Energy: 10.6 eV or 10.0 eV

Humidity Response: $\leq$ 1% @ 90% R.H.

Humidity Quenching Effect: < 15% @ 90% R.H.

eVx Sensor Serviceable Parts: Lamp, detector cell, filters (2), spacer and cap.

Warranty Period: 18 months

Section 4 - Service

4.1 Performance and Maintenance

A sensor's response to gases may change with time. The common term for this is "Span Drift". The main reason for this drift is typically contamination of the lamp's window.

If the sensor is being used for ambient air applications or applications involving samples containing heavy compounds and/or particles, the lamp window will get contaminated. The rate of the window contamination is a function of the sample gas condition, i.e. how badly it is contaminated with chemicals and particles. Contamination of the lamp window can cause partial UV light blocking, which in turn will reduce the detector's sensitivity. In this case, more frequent calibration is needed and periodic cleaning of the lamp lens. For lamp cleaning instructions refer to Appendix III.

Most VOC's (e.g. isobutylene, benzene) do not contaminate lens and the drift is very small. Typically, span drift does not exceed 10-15% per month of continuous operation. In favorable conditions over a six month period, span drift may be between 15 and 30%.

However, some compounds (such as silicones) are deposited on the lamp window at a more rapid rate. In those circumstances, span drift may be up to 10-20% over an eight hour period.
Also dirt, dust, cleaners, smoke, perfume, etc. in the air can contaminate the lamp window requiring more frequent cleaning.

4.2 VOC-TRAQ II's Life and Service

The life span of the VOC-TRAQ II is basically unlimited; however, there are several PID components that will periodically need replaced depending on the amount of use and the sample that is applied to the sensor.

The UV lamp has a small irreversible internal degradation over time but is insignificant until after 6000 hours of operation. The lens of the lamp can also become contaminated over time if it is exposed to samples containing heavy compounds and/or particles. Periodic calibration of the sensor will compensate for the lamp degradation. If the sensor is used for measuring low-level contaminations in pure gases, it will last as long as the lamp, i.e. >6000 hours without cleaning the lamp or servicing the PID.

All PID replacement parts including the lamp, detector cell, cap, spacer and filters (2) are listed in the eVx User Manual Appendix III.

Please refer to the eVx User Manual included on your Flash Memory provided for features and service of the eVx sensor.